

UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE United States Patent and Trademark Office Address: COMMISSIONER FOR PATENTS P.O. Box 1450 Alexandria, Virginia 22313-1450 www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	ATTORNEY DOCKET NO. CONFIRMATION NO.	
10/663,807	09/17/2003	Eiji Hayashi	Q77558	4057	
65565 SUGHRUE-26	7590 06/20/2007 5550	EXAMINER			
	LVANIA AVE. NW	BOES, TERENCE			
WASHINGTON, DC 20037-3213			ART UNIT	PAPER NUMBER	
•			3682		
				· · · · · · · · · · · · · · · · · · ·	
			MAIL DATE	DELIVERY MODE	
			06/20/2007	PAPER	

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary		Application N	lo.	Applicant(s)			
		10/663,807		HAYASHI, EIJI			
		Examiner		Art Unit			
		Terence Boes		3682			
The MAILING DATE of this communication appears on the cover sheet with the correspondence address Period for Reply							
WHIC - Exte after - If NC - Failu Any	ORTENED STATUTORY PERIOD FOR REPLY CHEVER IS LONGER, FROM THE MAILING DATE in the may be available under the provisions of 37 CFR 1.13 SIX (6) MONTHS from the mailing date of this communication. It is period for reply is specified above, the maximum statutory period were to reply within the set or extended period for reply will, by statute, reply received by the Office later than three months after the mailing ed patent term adjustment. See 37 CFR 1.704(b).	ATE OF THIS 36(a). In no event, h will apply and will exp , cause the applicati	COMMUNICATION nowever, may a reply be timber SIX (6) MONTHS from to become ABANDONE!	N. nely filed the mailing date of this communication. D (35 U.S.C. § 133).			
Status							
1)⊠	Responsive to communication(s) filed on <u>20 March 2007</u> .						
	This action is FINAL . 2b) This action is non-final.						
3)	Since this application is in condition for allowance except for formal matters, prosecution as to the merits is						
	closed in accordance with the practice under Ex parte Quayle, 1935 C.D. 11, 453 O.G. 213.						
Disposition of Claims							
<u>.</u>	4) Claim(s) 1-31 is/are pending in the application. 4a) Of the above claim(s) 16-27 is/are withdrawn from consideration.						
	Claim(s) is/are allowed.						
	□ Claim(s) 1-15 and 28-31 is/are rejected.						
7)	Claim(s) is/are objected to.						
8)[Claim(s) are subject to restriction and/or	r election requ	irement.				
Application Papers							
9)[The specification is objected to by the Examine	er.					
10)🖂	The drawing(s) filed on 20 March 2007 is/are: a	a)⊠ accepted	or b) objected to	by the Examiner.			
	Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).						
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d). 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.							
Priority under 35 U.S.C. § 119							
12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f). a) △ All b) ☐ Some * c) ☐ None of:							
1. Certified copies of the priority documents have been received.							
2. Certified copies of the priority documents have been received in Application No.							
3. Copies of the certified copies of the priority documents have been received in this National Stage							
application from the International Bureau (PCT Rule 17.2(a)).							
* See the attached detailed Office action for a list of the certified copies not received.							
			·				
Attachment(s)							
1) Notice of References Cited (PTO-892) 2) Notice of Draftsperson's Patent Drawing Review (PTO-948) 4) Interview Summary (PTO-413) Paper No(s)/Mail Date							
Notice of Draftsperson's Patent Drawing Review (PTO-948) Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date			Notice of Informal P Other:				

Art Unit: 3682

DETAILED ACTION

Claim Objections

1. Claim 11 is objected to because of the following informalities: Page 5, line 1 recites "...the ball scooping is inserted...", which appears to be a typographical error of -...the ball scooping **portion** is inserted...-. Appropriate correction is required.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless -

- (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.
- 2. Claims 1-3, 7, 8, 9, 11-13, 15, 30 and 31 are rejected under 35 U.S.C. 102(b) as being anticipated by Conant 2,882,742.

Conant discloses:

- a screw shaft (10) including a spiral-shaped ball rolling groove (11) formed
 in an outer peripheral surface thereof;
- a nut (12) including a spiral-shaped ball rolling groove (13) formed in an inner peripheral surface thereof;
- a plurality of balls (16) disposed in a ball rolling passage formed by the two ball rolling grooves;
- a ball circulation tube (17) forming a ball circulation passage and including
 a ball scooping portion in an end portion thereof,

Art Unit: 3682

 a tube guide insertion hole is formed on the nut at a position where the ball scooping portion is inserted (see figure 6),

- a tube guide (35) via which the ball circulation tube is mounted onto the nut.
- the tube guide (35) comprising: a top surface; a bottom surface; and a side surface connecting the top surface and the bottom surface (see figure 6),
- wherein a scooping portion insertion hole is formed so as to penetrate
 from the top surface to the bottom surface (see figure 6),
- the ball scooping portion is inserted into the scooping portion insertion hole (see figure 6),
- a tube guide insertion hole is formed on the nut at a position where the ball scooping is inserted.
- the side surface has a shape matched to an inner shape of a tube guide insertion hole (see figure 6),
- the scooping portion insertion hole has an inner shape matched to an outer shape of the ball scooping portion (see figure 6).
- wherein the side surface is formed in a cylindrical shape (see figure 6)
- wherein an axial line of the cylindrical shape is set perpendicular to an axial line of the nut (see figure 6)

Art Unit: 3682

 wherein the tube guide is made of elastic material (because all materials have a modulus of elasticity, the tube guide is made of an elastic material).

 wherein the tube guide is interposed between the ball scooping portion and the tube guide insertion hole without any clearance between the ball scooping portion and the tube guide insertion hole (see figure 6).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 4-6, 10 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Conant 2,882,742 in view of Ebina et al. US 6,089,117.

Conant discloses all of the claimed subject matter as described above. Conant does not disclose wherein the scooping portion insertion hole has a ball circulation passage scooping angle set so as to correspond to the a lead angle of the ball screw.

Ebina et al. teach wherein the scooping portion insertion hole has a ball circulation passage scooping angle set so as to correspond to the a lead angle of a ball screw (see figure 8) for the purpose of achieving smooth circulation of balls (C16/L45-60).

It would have been obvious to one having ordinary skill in the art at the time of the invention to modify the teachings of Conant and provide wherein the scooping Art Unit: 3682

portion insertion hole has a ball circulation passage scooping angle set so as to correspond to the a lead angle of a ball screw, as taught by Ebina et al., for the purpose of achieving smooth circulation of balls.

Conant further discloses:

- wherein the tube guide is made of elastic material (because all materials have a modulus of elasticity, the tube guide is made of an elastic material).
- 4. Claims 28 and 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Conant 2,882,742 in view of Rohlinger US 5,373,755.

Conant discloses all of the claimed subject matter as described above. Conant does not disclose a chamfered top surface.

Rohlinger teaches a chamfered top surface (see figures 4 and 6 @ 41) for the purpose of closely supporting a circulation tube while allowing for a radius to smoothly guide balls (C6/L55-65), thus avoiding an abrupt change in ball direction and improving operational efficiency.

It would have been obvious to one having ordinary skill in the art at the time of the invention to modify the teachings of Conant and provide a chamfered top surface, as taught by Rohlinger, for the purpose of closely supporting a circulation tube while allowing for a radius to smoothly guide balls, thus avoiding an abrupt change in ball direction and improving operational efficiency.

Art Unit: 3682

Response to Arguments

5. Applicant's arguments with respect to claims 1-15, and 28-31 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Terence Boes whose telephone number is (571) 272-4898. The examiner can normally be reached on Monday - Friday 9:00 AM - 4:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richard Ridley can be reached on (571) 272-6917. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 3682

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

TB TB 6/1/07

RICHARD RIDLEY
SUPERVISORY PATENT EXAMINER